



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200  
Fax 613 632-5246

**D4680-041**  
**Job Sheet 192028**



**Part No:** D4680-041

**Job Qty:** 1 pcs

**Part Name:** Skidtube Assembly



**Part Weight:** 0 lbs

**Status:** New

**Priority:** Medium

**Job Created:** 3/14/19

**Job Tracking No:**

**Due Date:** 4/2/19

**Created By:** Marie Lajeunesse

**Type:** SOLD

**Description:**

**Note:** DWG REV F IPP REV:A 13.04.16 NEW ISSUE DD VERF:JLM IPP REV:B 13.08.08 PB2 DD VERF:JLM IPP REV:C 13.09.10 PB3 DD VERF:JLM IPP REV:D 13.11.14 AS PER DWG REV.B DD VERF:JLM IPP REV:C 14.11.24 AS PER DWG REV.C DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG REV.D DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.E DD VERF:JLM

**Ship Via:**

### Bill of Materials

### Job Routing

| Op No | Operation                      | Qty      | Start Date | Due Date | Standard  |         | Workcenter/Supplier      |           | Sign-off    |
|-------|--------------------------------|----------|------------|----------|-----------|---------|--------------------------|-----------|-------------|
|       |                                |          |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier    | Lead Time |             |
| 120   | Skidtubes - 1                  | 1<br>pcs |            | 4/2/19   | 0.00      | 4.86    | Skidtubes - 1            |           | PD          |
|       |                                |          |            |          |           |         | Skidtubes - 2            |           |             |
|       |                                |          |            |          |           |         | Skidtubes - 3            |           |             |
|       |                                |          |            |          |           |         | Skidtubes - 4            |           |             |
|       |                                |          |            |          |           |         | Skidtubes - 5            |           |             |
|       |                                |          |            |          |           |         | Skidtubes - 6            |           |             |
|       |                                |          |            |          |           |         | Skidtubes - 7            |           |             |
| 140   | QC 5                           | 1        |            | 4/2/19   | 0.00      | 0.00    | QC 5 - 10                |           | PD 19-03-29 |
|       |                                |          |            |          |           |         | QC 5 - 12                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 17                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 18                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 19                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 22                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 24                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 3                 |           |             |
|       |                                |          |            |          |           |         | QC 5 - 42                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 43                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 49                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 51                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 58                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 68                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 9                 |           |             |
|       |                                |          |            |          |           |         | QC 5 - 50                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 30                |           |             |
|       |                                |          |            |          |           |         | QC 5 - 40                |           |             |
| 150   | Handfinish - 1-1 Chemical- B4B | 1<br>pcs |            | 4/2/19   | 0.00      | 0.73    | Handfinish - 1 - 1 - B4B |           |             |
|       |                                |          |            |          |           |         | Handfinish - 1 - 2 - B4B |           |             |
|       |                                |          |            |          |           |         | Handfinish - 1 - 3 - B4B |           |             |
|       |                                |          |            |          |           |         | Handfinish - 1 - 4 - B4B |           |             |



Container No: S164439



Part: D4680 - 041

Job No: 192028

Serial No/Batch: S164439

Revision: F

Inspector:

Exp Date:

Instructions: Various STC's

Date: 03/20/19

S164439x1

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|                         |          |        |           |                           |              |
|-------------------------|----------|--------|-----------|---------------------------|--------------|
|                         |          |        |           | Handfinish - 1 - 5 - B4B  |              |
|                         |          |        |           | Handfinish - 1 - 6 - B4B  |              |
|                         |          |        |           | Handfinish - 1 - 7 - B4B  |              |
|                         |          |        |           | Handfinish - 1 - 8 - B4B  |              |
|                         |          |        |           | Handfinish - 1 - 9 - B4B  |              |
|                         |          |        |           | Handfinish - 1 - 10 - B4B | D.R 19/04/02 |
|                         |          |        |           | Handfinish - 1 - 11 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 12 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 13 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 14 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 15 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 16 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 17 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 18 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 19 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 20 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 21 - B4B |              |
|                         |          |        |           | Handfinish - 1 - 22 - B4B |              |
| 160 QC 7                | 1<br>pcs | 4/2/19 | 0.00 0.00 | QC 7 - 10                 |              |
|                         |          |        |           | QC 7 - 13                 |              |
|                         |          |        |           | QC 7 - 14                 |              |
|                         |          |        |           | QC 7 - 15                 |              |
|                         |          |        |           | QC 7 - 17                 |              |
|                         |          |        |           | QC 7 - 18                 |              |
|                         |          |        |           | QC 7 - 19                 |              |
|                         |          |        |           | QC 7 - 2                  |              |
|                         |          |        |           | QC 7 - 28                 |              |
|                         |          |        |           | QC 7 - 3                  |              |
|                         |          |        |           | QC 7 - 30                 |              |
|                         |          |        |           | QC 7 - 34                 |              |
|                         |          |        |           | QC 7 - 36                 |              |
|                         |          |        |           | QC 7 - 37                 |              |
|                         |          |        |           | QC 7 - 41                 |              |
|                         |          |        |           | QC 7 - 47                 |              |
|                         |          |        |           | QC 7 - 48                 |              |
|                         |          |        |           | QC 7 - 51                 |              |
|                         |          |        |           | QC 7 - 58                 |              |
|                         |          |        |           | QC 7 - 59                 |              |
|                         |          |        |           | QC 7 - 60                 | M66          |
|                         |          |        |           | QC 7 - 9                  |              |
|                         |          |        |           | QC 7 - 68                 |              |
|                         |          |        |           | QC 7 - 50                 |              |
|                         |          |        |           | QC 7 - 67                 |              |
|                         |          |        |           | QC 7 - 40                 |              |
| 170 Skidtubes - 2 - B4B | 1<br>pcs | 4/2/19 | 0.00 4.86 | Skidtubes - 1 - B4B       | DD           |
|                         |          |        |           | Skidtubes - 2 - B4B       |              |
|                         |          |        |           | Skidtubes - 3 - B4B       |              |
|                         |          |        |           | Skidtubes - 4 - B4B       |              |



|                                     |       |        |           |                                       |                |
|-------------------------------------|-------|--------|-----------|---------------------------------------|----------------|
|                                     |       |        |           | Skid tubes - 5 - B4B                  |                |
|                                     |       |        |           | Skid tubes - 6 - B4B                  |                |
|                                     |       |        |           | Skid tubes - 7 - B4B                  |                |
| 180 QC 5                            | 1 pcs | 4/2/19 | 0.00 0.00 | QC 5 - 10                             |                |
|                                     |       |        |           | QC 5 - 12                             |                |
|                                     |       |        |           | QC 5 - 17                             |                |
|                                     |       |        |           | QC 5 - 18                             |                |
|                                     |       |        |           | QC 5 - 19                             |                |
|                                     |       |        |           | QC 5 - 22                             | DAS            |
|                                     |       |        |           | QC 5 - 24                             | 24 MAY 23 2019 |
|                                     |       |        |           | QC 5 - 3                              | 9-89           |
|                                     |       |        |           | QC 5 - 42                             |                |
|                                     |       |        |           | QC 5 - 43                             |                |
|                                     |       |        |           | QC 5 - 49                             |                |
|                                     |       |        |           | QC 5 - 51                             |                |
|                                     |       |        |           | QC 5 - 58                             |                |
|                                     |       |        |           | QC 5 - 68                             |                |
|                                     |       |        |           | QC 5 - 9                              |                |
|                                     |       |        |           | QC 5 - 50                             |                |
|                                     |       |        |           | QC 5 - 30                             |                |
|                                     |       |        |           | QC 5 - 40                             |                |
| 210 Handfinish - 2-1 Pressure- B4B  | 1 pcs | 4/2/19 | 0.00 0.73 | Handfinish - 2 - 1 - B4B              | 3-5            |
|                                     |       |        |           | Handfinish - 2 - 2 - B4B              |                |
|                                     |       |        |           | Handfinish - 2 - 3 - B4B              |                |
|                                     |       |        |           | Handfinish - 2 - 4 - B4B              |                |
| 220 Powdercoat - 1 White Gl(A)- B4B | 1 pcs | 4/2/19 | 0.00 0.17 | Powdercoat - 1 - B4B                  |                |
|                                     |       |        |           | Powdercoat - 2 - B4B                  |                |
|                                     |       |        |           | Powdercoat - 3 - B4B                  | BE 19-05-29    |
|                                     |       |        |           | Powdercoat - 4 - B4B                  |                |
|                                     |       |        |           | START: 11:10 ON T. 320° FINISH: 10:40 |                |
| 230 QC 3                            | 1 pcs | 4/2/19 | 0.00 0.00 | QC 3 - 10                             |                |
|                                     |       |        |           | QC 3 - 13                             |                |
|                                     |       |        |           | QC 3 - 15                             |                |
|                                     |       |        |           | QC 3 - 17                             |                |
|                                     |       |        |           | QC 3 - 18                             |                |
|                                     |       |        |           | QC 3 - 2                              |                |
|                                     |       |        |           | QC 3 - 28                             |                |
|                                     |       |        |           | QC 3 - 3                              |                |
|                                     |       |        |           | QC 3 - 30                             |                |
|                                     |       |        |           | QC 3 - 34                             |                |
|                                     |       |        |           | QC 3 - 36                             |                |
|                                     |       |        |           | QC 3 - 41                             |                |
|                                     |       |        |           | QC 3 - 51                             |                |
|                                     |       |        |           | QC 3 - 58                             |                |
|                                     |       |        |           | QC 3 - 59                             | BE 19-05-29    |
|                                     |       |        |           | QC 3 - 68                             |                |
|                                     |       |        |           | QC 3 - 9                              |                |
|                                     |       |        |           | QC 3 - 40                             |                |
|                                     |       |        |           | QC 3 - 19                             |                |
| 260 Handfinish - 4-1-Assembly-B4B   | 1 pcs | 4/2/19 | 0.00 0.73 | Handfinish - 4 - 1 - B4B              |                |
|                                     |       |        |           | Handfinish - 4 - 10 - B4B             | BE 19-05-29    |
|                                     |       |        |           | Handfinish - 4 - 11 - B4B             |                |
|                                     |       |        |           | Handfinish - 4 - 12 - B4B             |                |
|                                     |       |        |           | Handfinish - 4 - 13 - B4B             |                |
|                                     |       |        |           | Handfinish - 4 - 14 - B4B             |                |
|                                     |       |        |           | Handfinish - 4 - 15 -                 |                |

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|     |                             |     |        |                          |                        |
|-----|-----------------------------|-----|--------|--------------------------|------------------------|
|     |                             |     |        | B4B                      |                        |
|     |                             |     |        | Handfinish - 4 - 2 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 3 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 4 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 5 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 6 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 7 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 8 - B4B |                        |
|     |                             |     |        | Handfinish - 4 - 9 - B4B |                        |
| 270 | QC 5                        | 1   | 4/2/19 | 0.00 0.00                | QC 5 - 10              |
|     |                             | pcs |        |                          | QC 5 - 12              |
|     |                             |     |        |                          | QC 5 - 17              |
|     |                             |     |        |                          | QC 5 - 18              |
|     |                             |     |        |                          | QC 5 - 19              |
|     |                             |     |        |                          | QC 5 - 22              |
|     |                             |     |        |                          | QC 5 - 24              |
|     |                             |     |        |                          | QC 5 - 3               |
|     |                             |     |        |                          | QC 5 - 42              |
|     |                             |     |        |                          | QC 5 - 43              |
|     |                             |     |        |                          | QC 5 - 49              |
|     |                             |     |        |                          | QC 5 - 51              |
|     |                             |     |        |                          | QC 5 - 58              |
|     |                             |     |        |                          | QC 5 - 68              |
|     |                             |     |        |                          | QC 5 - 9               |
|     |                             |     |        |                          | QC 5 - 50              |
|     |                             |     |        |                          | QC 5 - 30              |
|     |                             |     |        |                          | QC 5 - 40              |
| 300 | Packaging 3-1 - Stock - B4B | 1   | 4/2/19 | 0.00 0.00                | Packaging 3 - 1 - B4B  |
|     |                             | pcs |        |                          | Packaging 3 - 2 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 3 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 4 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 5 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 6 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 7 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 8 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 9 - B4B  |
|     |                             |     |        |                          | Packaging 3 - 10 - B4B |
|     |                             |     |        |                          | Packaging 3 - 11 - B4B |
|     |                             |     |        |                          | Packaging 3 - 12 - B4B |
|     |                             |     |        |                          | Packaging 3 - 13 - B4B |
|     |                             |     |        |                          | Packaging 3 - 14 - B4B |
|     |                             |     |        |                          | Packaging 3 - 15 - B4B |
|     |                             |     |        |                          | Packaging 3 - 16 - B4B |
|     |                             |     |        |                          | Packaging 3 - 17 - B4B |
|     |                             |     |        |                          | Packaging 3 - 18 - B4B |
|     |                             |     |        |                          | Packaging 3 - 19 - B4B |
|     |                             |     |        |                          | Packaging 3 - 20 - B4B |
|     |                             |     |        |                          | Packaging 3 - 21 - B4B |
|     |                             |     |        |                          | Packaging 3 - 22 - B4B |
|     |                             |     |        |                          | Packaging 3 - 23 - B4B |
|     |                             |     |        |                          | Packaging 3 - 24 - B4B |
|     |                             |     |        |                          | Packaging 3 - 25 - B4B |
|     |                             |     |        |                          | Packaging 3 - 26 - B4B |
|     |                             |     |        |                          | Packaging 3 - 27 - B4B |
|     |                             |     |        |                          | Packaging 3 - 28 - B4B |
|     |                             |     |        |                          | Packaging 3 - 29 - B4B |
|     |                             |     |        |                          | Packaging 3 - 30 - B4B |
|     |                             |     |        |                          | Packaging 3 - 31 - B4B |
|     |                             |     |        |                          | Packaging 3 - 32 - B4B |

DAS  
JUN 04 2019 68  
9-89

DAS  
75  
9-89

JUL 16 2019







|                |       |        |           |                        |                |
|----------------|-------|--------|-----------|------------------------|----------------|
|                |       |        |           | Packaging 3 - 33 - B4B |                |
|                |       |        |           | Packaging 3 - 34 - B4B |                |
|                |       |        |           | Packaging 3 - 35 - B4B |                |
|                |       |        |           | Packaging 3 - 36 - B4B |                |
| 310 QC 21 - SA | 1 pcs | 4/2/19 | 0.00 0.00 | QC 21 - SA - 21        | DAS            |
|                |       |        |           | QC 21 - SA - 70        | JUL 16 2019 70 |
|                |       |        |           | QC 21 - SA - 53        | 9-89           |

Part Op 120 - 1-Cut Aft end as per dwg D4680 3-Drill Aft & Fwd Cap holes using DT8678 & DT8901 open aft cap 0.187". 4-Locate Descriptions: DT10149 & Drill Ground wire hole on top of Tube. 5-Locate DT10149 with 0.187" cleco in aft cap ,then Pilot Drill all X-Bolt holes using 0.187" drill. 6-Open ground wire hole .297" at 95.75" (1 at fwd end & 2 at aft end at 20.81" ref.) 8- 3 most fwd x-bolt holes must be laid out manually, open to #30. 9-Open Aft & Fwd Cap holes using .208" drill. 10- Open X-Bolt holes to .750" (10 places) 11- Drill Rivet Holes as per Dwg D4680 using DT10065 \*\*\*DO NOT DRILL RIVET HOLES ON SECTION G-G (TWO PLACES) Open G-G to .750 12-Debur holes.

140 - (QC5- Inspect part completeness to step on W/O)  
 150 - (Chemical Conversion Coat per QSI005 4.1)  
 160 - (QC7-Inspect Chemical Conversion Coat)  
 170 - 1- Bond web as per Dwg D4680 & QSI 015 2- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4680. A/R Proseal Batch: 5174342 exp date: 19/12 \*\*\*LET IT CURE FOR 7HRS\*\*\* START TIME: \_\_\_\_\_ FINISH TIME: \_\_\_\_\_ 3- Rivet doublers as per dwg Shave rivet as required, remove Proseal spill over. 4- Ream holes section C-C as per dwg, deburr 8 places 5- Swage x-bolt spacers as per Dwg D4680 and sectionl C-C 8 places. 6- Swage x-bolt spacer as per dwg D4680 section G-G 7- Trim/Grind flush per QSI 002

180 - (QC5- Inspect part completeness to step on W/O)  
 210 - (Pressure Wash per QSI005 4.3/ Clean and remove all markings), Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.  
 220 - (White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum), START TIME: \_\_\_\_\_  
 230 - (QC3- Inspect Part Finish)  
 260 - (Assemble as per dwg), 1- Install Ground Wire inserts as per Dwg D4680. 2-Inspect for Foreign objects 3- Install Fwd & Aft caps as per Dwg D4680 and Detail "A" & "B". Fastener must be install wet as per note (9). Seal all faying surfaces note (8) A/R 241 Sika Flex Batch: 5174342 Exp Date: 19/12 4- Wing Walk as per Dwg D4680 and QSI 005 4.4 Batch: \_\_\_\_\_  
 270 - (QC5- Inspect part completeness to step on W/O)  
 300 - (Identify as per dwg & Stock Location: \_\_\_\_\_)  
 310 - (QC21- Final Inspection - Work Order Release)

## Job BOM

| Part / Item    | Component Name   | Quantity       | Operation                         | Container    |
|----------------|------------------|----------------|-----------------------------------|--------------|
| D4680-041-BENT | Extrusion Bent   | 1 pcs (1 ea)   | 120-Skidtubes - 1                 | M. H. 010059 |
| D5520-1        | Doubler          | 2 pcs (2 ea)   | 120-Skidtubes - 1                 | 315286       |
| CR3212-5-05    | Rivet            | 71 pcs (68 ea) | 170-Skidtubes - 2 - B4B           | 3146805      |
| D4681-041      | Web Assembly     | 1 pcs (1 ea)   | 170-Skidtubes - 2 - B4B           | 3152507      |
| AELS-1032-130  | Rivnut           | 3 Ea (3 ea)    | 260-Handfinish - 4-1-Assembly-B4B | 3164043      |
| AN3C4A         | Bolt             | 3 Ea (3 ea)    | 260-Handfinish - 4-1-Assembly-B4B | 3152720      |
| AN3C5A         | Bolt             | 2 Ea (2 ea)    | 260-Handfinish - 4-1-Assembly-B4B | 3143675      |
| AN526C1032R10  | Screw            | 2 Ea (2 ea)    | 260-Handfinish - 4-1-Assembly-B4B | 3174233      |
| D2965          | Cap              | 1 pcs (1 ea)   | 260-Handfinish - 4-1-Assembly-B4B | 3166981      |
| D2965-3        | Cap              | 1 pcs (1 ea)   | 260-Handfinish - 4-1-Assembly-B4B | 3045482      |
| D4686-1        | Spacer           | 8 pcs (8 ea)   | 260-Handfinish - 4-1-Assembly-B4B | 3166571      |
| D5304-1        | Crossbolt Spacer | 2 pcs (2 ea)   | 260-Handfinish - 4-1-Assembly-B4B | 3163947      |
| MS20601-AD4W3  | Rivet            | 32 Ea (32 ea)  | 260-Handfinish - 4-1-Assembly-B4B | 3148225      |
| NAS1149C0332R  | Washer           | 5 Ea (5 ea)    | 260-Handfinish - 4-1-Assembly-B4B | 3160312      |
| D4753-1        | Doubler          | 16 pcs (16 ea) | 300-Packaging 3-1 - Stock - B4B   | 3155028      |
|                |                  |                |                                   | 3169805      |

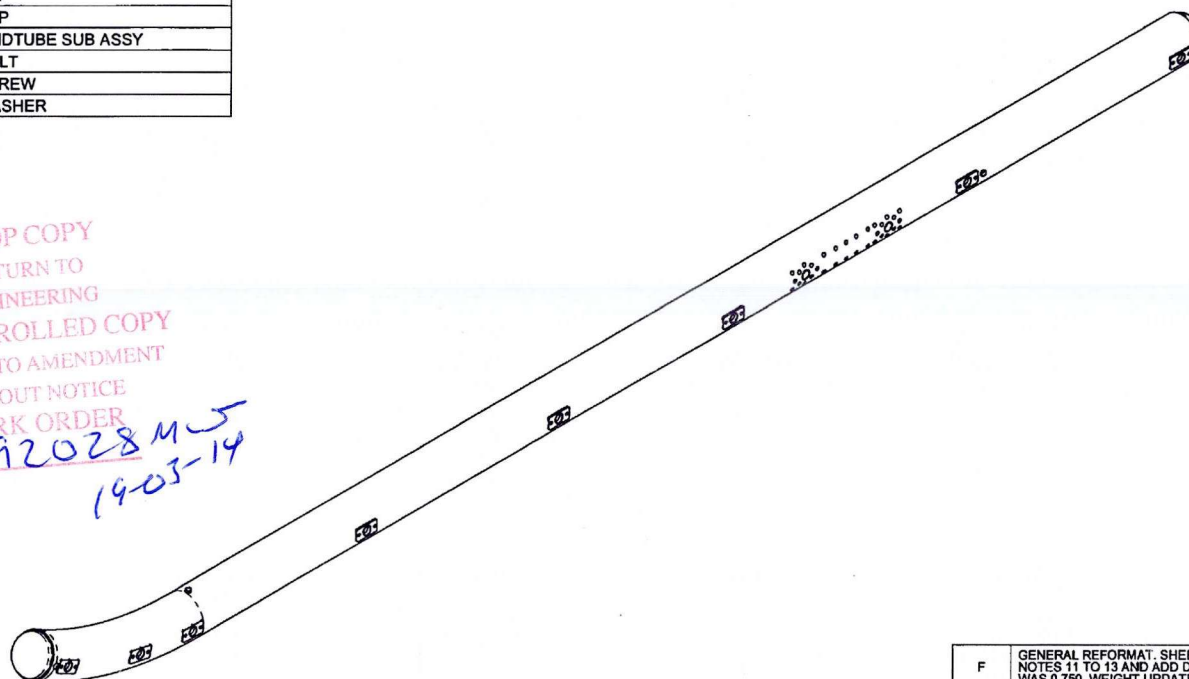
| Job Allocations                    |                |          |           |           |
|------------------------------------|----------------|----------|-----------|-----------|
| Operation                          | Component Part | Required | Inventory | Allocated |
| 120-Skidtubes - 1                  | D4680-041-BENT | 1        | 8         | 0         |
|                                    | D5520-1        | 2        | 24        | 0         |
| 170-Skidtubes - 2 - B4B            | CR3212-5-05    | 68       | 1,296     | 0         |
|                                    | D4681-041      | 1        | 4         | 0         |
| 260-Handfinish - 4-1-Assembly-B4B  | AELS-1032-130  | 3        | 101       | 0         |
|                                    | AN3C4A         | 3        | 2,016     | 0         |
|                                    | AN3C5A         | 2        | 1,446     | 0         |
|                                    | AN526C1032R10  | 2        | 57        | 0         |
|                                    | D2965          | 1        | 23        | 0         |
|                                    | D2965-3        | 1        | 5         | 0         |
|                                    | D4686-1        | 8        | 36        | 0         |
|                                    | D5304-1        | 2        | 43        | 0         |
|                                    | MS20601-AD4W3  | 32       | 846       | 0         |
|                                    | NAS1149C0332R  | 5        | 5,191     | 0         |
| 300-Packaging 3-1 - Stock - B4B    | D4753-1        | 16       | 35        | 0         |
| Part Specifications                |                |          |           |           |
| Specifications could not be found. |                |          |           |           |

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| ITEM | QTY<br>-041 | P/N           | DESCRIPTION       |
|------|-------------|---------------|-------------------|
|      | X           | D4680-041     | SKIDTUBE          |
| 1    | 1           | D2965         | CAP               |
| 2    | 1           | D2965-3       | CAP               |
| 3    | 1           | D4680-043     | SKIDTUBE SUB ASSY |
| 4    | 2           | AN3C5A        | BOLT              |
| 5    | 2           | AN526C1032R10 | SCREW             |
| 6    | 2           | NAS1149C0332R | WASHER            |

SHOP COPY  
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UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 192028 MJS  
1903-14



# NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER QSI 005 SECTION 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4680-041" AND B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF SKIDTUBE BEFORE INSTALLING D2965 CAP

- 7) WEIGHT: 19.3 lbs
- 8) SEAL FAYING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT

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2017-08-11  
ECN17-547

|            |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                     |              |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| F          | GENERAL REFORMAT, SHEET 3: ADD ITEMS 6 & 11 ADD NOTES 11 TO 13 AND ADD DETAIL H, SHEET 5: Ø0.188 WAS 0.750. WEIGHT UPDATE. ADD PROSEAL 1422                                                                                                                                  | AJS                                                                                                                                                                                                                                                                                 | 17.03.30     |
| E          | GROUND HANDLING CROSSBOLT SPACERS NOW SWAGED, WAS WELDED. REMOVED D3492-055 PLUG ASSEMBLIES                                                                                                                                                                                  | AP                                                                                                                                                                                                                                                                                  | 15.11.02     |
| D          | MOVED AFT GROUNDING FASTENER HOLE AFT 0.25 DUE TO INTERFERENCE, ADDED NOTE 9 (SHT 1), GROUNDING STRAP WASHERS NOW STAINLESS                                                                                                                                                  | AP                                                                                                                                                                                                                                                                                  | 15.03.04     |
| C          | NAS1149F0332P WAS AN960-10L, AN526C1032R10 WAS AN526C1032-10, FWD GROUNDING STRAP FASTENER MOVED AFT (C3-3), Ø0.750 WAS Ø0.758 (B4-3).                                                                                                                                       | AP                                                                                                                                                                                                                                                                                  | 14.07.29     |
| B          | FWD CAP WAS D2965 NOW D2965-3. VARIOUS DIMENSIONAL CHANGES. D3492-055 PLUG ASSY WAS D3492-051. SWAGING DIMENSION NOW 0.650 WAS 0.661 (D6-2), ADDED DETAIL H (C2-3), MATERIAL D2962-150 WAS D2962-131 (A7-3), GROUND HANDLING THRU HOLES NOW WELDED, ADDED SECTION G-G (D3-2) | AP                                                                                                                                                                                                                                                                                  | 13.09.10     |
| A          | NEW ISSUE                                                                                                                                                                                                                                                                    | AP                                                                                                                                                                                                                                                                                  | 13.02.13     |
| REV.       | DESCRIPTION                                                                                                                                                                                                                                                                  | BY                                                                                                                                                                                                                                                                                  | DATE         |
| DESIGN     | AP                                                                                                                                                                                                                                                                           | DART AEROSPACE USA, INC.<br>EUGENE, OR                                                                                                                                                                                                                                              |              |
| DRAWN      | AJS                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                     |              |
| CHECKED    | ML                                                                                                                                                                                                                                                                           | DRAWING NO.                                                                                                                                                                                                                                                                         | REV. F       |
| MFG. APPR. | DP                                                                                                                                                                                                                                                                           | D4680                                                                                                                                                                                                                                                                               | SHEET 1 OF 5 |
| APPROVED   | WM                                                                                                                                                                                                                                                                           | TITLE                                                                                                                                                                                                                                                                               | SCALE        |
| DE APPR.   | DS                                                                                                                                                                                                                                                                           | SKIDTUBE                                                                                                                                                                                                                                                                            | NTS          |
| DATE       | 17.03.30                                                                                                                                                                                                                                                                     | COPYRIGHT © 2013 BY DART AEROSPACE USA, INC.<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC. |              |

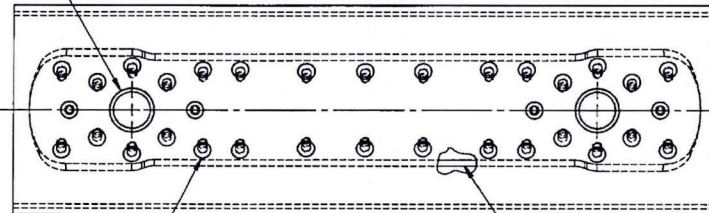
APPROVED





| ITEM | QTY<br>-043 | P/N           | DESCRIPTION           |
|------|-------------|---------------|-----------------------|
|      | X           | D4680-043     | SKIDTUBE SUB ASSY     |
| 1    | 1           | D4680-1       | SKIDTUBE              |
| 2    | 1           | D4681-041     | WEB ASSY              |
| 3    | 8           | D4686-1       | SPACER                |
| 4    | 16          | D4753-1       | DOUBLER               |
| 5    | 2           | D5304-1       | CROSSBOLT SPACER      |
| 6    | 2           | D5520-1       | DOUBLER               |
| 7    | 3           | AN3C4A        | BOLT                  |
| 8    | 32          | MS20601AD4W3  | RIVET, BLIND, CSK     |
| 9    | 3           | NAS1149C0332R | WASHER                |
| 10   | 3           | AELS-1032-130 | INSERT                |
| 11   | 68          | CR3212-5-05   | CSK RIVET, CHERRY MAX |

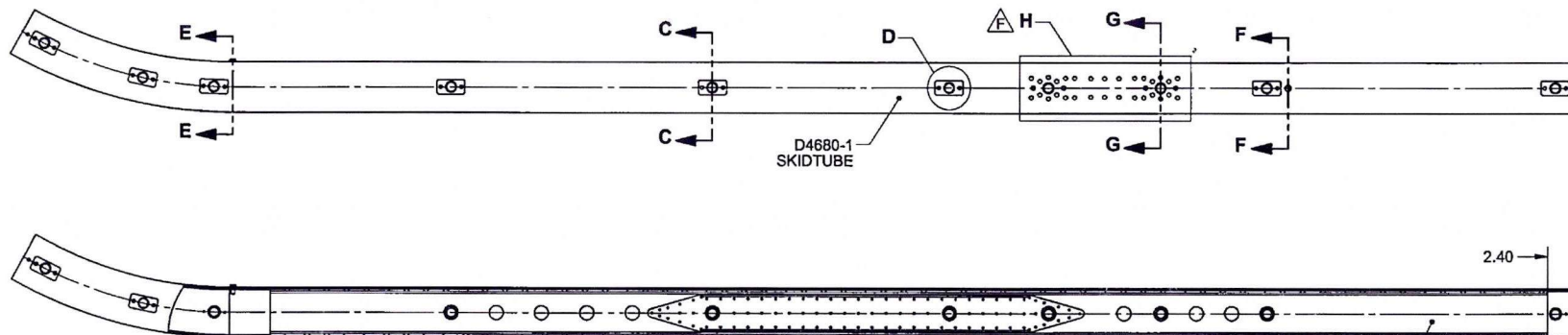
OPEN TO  
Ø0.750  
THRU 2 PL



13 12 CR3212-5-05  
CSK RIVET, CHERRY MAX  
34 PL PER DOUBLER

DETAIL H  
SCALE 4X

11 D5520-1 DOUBLER  
2 PL



D4680-043 SKIDTUBE SUB ASSY

9 D4681-041  
WEB ASSY

# NOTES:

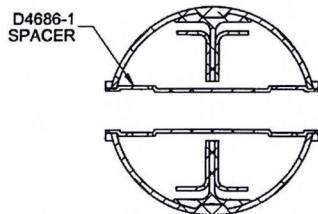
- 1) MATERIAL: N/A
- 2) FINISH: APPLY CHEMICAL CONVERSION COATING PER DART QSI 005 4.1 PRIOR TO INSTALLING D4681-041 WEB.  
POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 18.6 lbs
- 8) SEAL ALL MATING SURFACES USING PROSEAL 890/1422 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSERT D4681-041 WEB INTO D4680-1 SKIDTUBE IN LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015
- 10) INSTALL D4686-1 SPACER AFTER INSTALLING D4753-1 DOUBLERS
- 11) LOCATE THE D5520-1 DOUBLER USING THE Ø0.188 PILOT HOLES ON THE SKIDTUBE AND DOUBLER
- 12) LOCATE QTY (34) HOLES ONTO THE SKIDTUBE PER D5520-1 DOUBLER AND DRILL Ø0.161 THRU SKIDTUBE AND DOUBLER USING DT10309
- 13) COUNTERSINK THE SKIDTUBE Ø0.286 X 100° (34 PL) AND INSTALL EACH D5520-1 DOUBLER USING QTY (34) CR3212-5-05 CSK RIVETS

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2017-08-11

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|                                                                                                                                                                                                                                     |          |                                              |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------|--------------|
| DESIGN                                                                                                                                                                                                                              | AP       | <b>DART AEROSPACE USA, INC.</b>              |              |
| DRAWN                                                                                                                                                                                                                               | AJS      | EUGENE, OR                                   |              |
| CHECKED                                                                                                                                                                                                                             | ML       | DRAWING NO.                                  | REV. F       |
| MFG. APPR.                                                                                                                                                                                                                          | DP       | D4680                                        | SHEET 3 OF 5 |
| APPROVED                                                                                                                                                                                                                            | WM       | TITLE                                        | SCALE        |
| DE APPR.                                                                                                                                                                                                                            | DS       | SKIDTUBE                                     | NTS          |
| DATE                                                                                                                                                                                                                                | 17.03.30 | COPYRIGHT © 2013 BY DART AEROSPACE USA, INC. |              |
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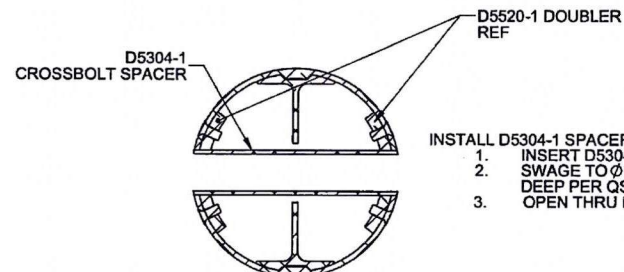




10 SECTION C-C  
SCALE 4X  
8 PL

INSTALL D4686-1 SPACER AS FOLLOWS (8 PL)  
AFTER INSTALLING D4753-1 DOUBLERS PER DETAIL D

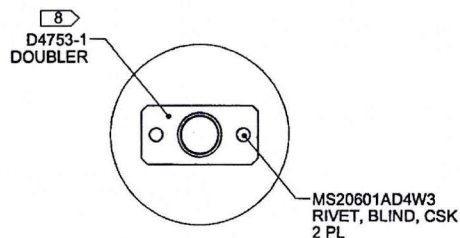
1. INSERT D4686-1 SPACER
2. SWAGE TO  $\phi 0.650 +0.010/-0.000 \times 1.0$   
DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002



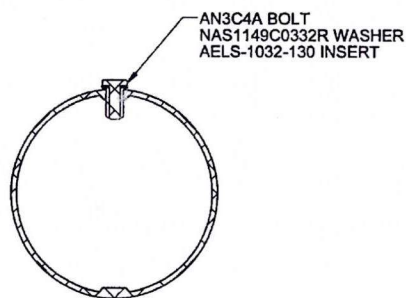
SECTION G-G  
SCALE 4X  
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

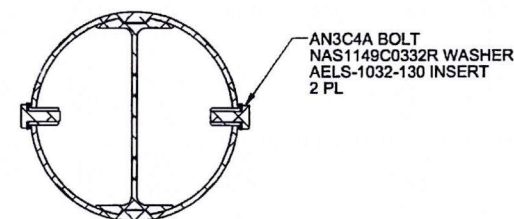
1. INSERT D5304-1 SPACER
2. SWAGE TO  $\phi 0.565 +0.005/-0.000 \times 1.0$   
DEEP PER QSI 002
3. OPEN THRU HOLE TO  $\phi 0.625$



DETAIL D  
16 PL (BOTH SIDES)  
SCALE 4X



SECTION E-E  
SCALE 4X



SECTION F-F  
SCALE 4X

RELEASED  
2017-08-11

APPROVED

|            |          |
|------------|----------|
| DESIGN     | AP       |
| DRAWN      | AJS      |
| CHECKED    | ML       |
| MFG. APPR. | DP       |
| APPROVED   | WM       |
| DE APPR.   | DS-#     |
| DATE       | 17.03.30 |

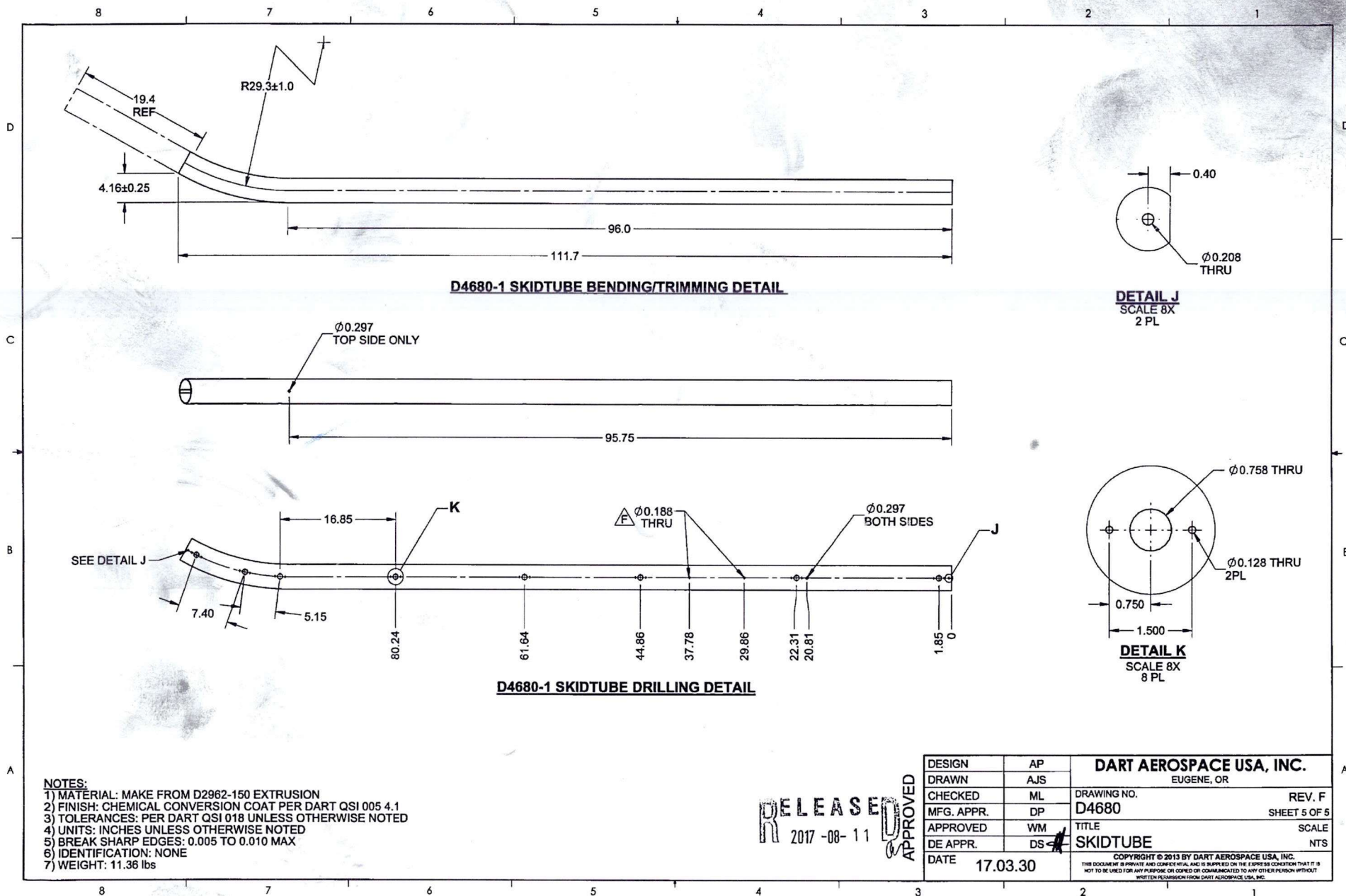
**DART AEROSPACE USA, INC.**  
EUGENE, OR

DRAWING NO. **D4680** REV. F  
SHEET 4 OF 5  
TITLE **SKIDTUBE** SCALE NTS

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Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Sequence #:                                                                                                                       | QTY Affected :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | MRB (QS1042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QC / QA Coordinator    |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Presservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |